

**ABSTRACT**

This is a method and apparatus for treatment of liquid media making use of at least one float positioned at the top of the liquid and at least one gas diffuser placed under the float and connected to this float by at least one brace, the diffuser is connected to a gas source by at least one flexible conduit. The gas emitted from the diffuser produces a mixture with liquid having density lower than the liquid and the float partially sinks in the liquid thus increasing the submergence of the diffuser and lowering the gas flow through the diffuser. At increased submergence, the gas flow is reduced, the mixture density increases, and the float rises. A repeatable motion up and down of the float-diffuser is established producing pulsations in the liquid. The method and apparatus can be used in a multitude of chemical, pharmaceutical, petrochemical, environmental and other industries for carrying out mass transfer, chemical and biological transformations, phase separations, thickening of suspensions, mixing, suspending of particles, washing, coagulation-flocculation, membrane filtration, filtration across particulate media, filtration across floating media, mass transfer across membrane, and other processes.

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